

Net-centric Operations

Jim Flyzik, The Flyzik Group

Good afternoon and welcome to this month's show. I'm Jim Flyzik of the Flyzik Group. On today's show we will discuss the issues of Net-centric ity and Net-centric operations.

With me today are:

- **Priscilla Guthrie, Deputy CIO, Department of Defense**
- **Brigadier General Dave Warner (USAF), Director, Command and Control, PEO C²C, DISA**
- **Major General Michael A. Vane, Vice Director for Force Structure, Resources and Assessments, J-8, Joint Staff, Department of Defense**
- **Dr. Ron Jost, Deputy Assistant Secretary of Defense for C³/Spectrum/Space, Department of Defense**
- **Cheryl Roby – Deputy Assistant Secretary of Defense, Resources, Department of Defense**
- **John Landon, Deputy Assistant Secretary of Defense, Acquisition, OASD(NII), Department of Defense**
- **Terry Mansfield, Director of Net-centric Operations, Unisys Corporation**
- **David West, Director, Field Operations Federal Center of Excellence, Cisco Systems**

Let's get right into today's topic. We've been hearing a lot about Net-centric Operations, net-centricity, it's been a buzz around town I'd like to start by asking each of our panelists your office's involvement with the subject and what does Net-centric operations mean to you.

Let's start with Priscilla...as the deputy CIO Dept of Defense, tell us a little about your involvement in the subject and what it means to you.

Priscilla Guthrie, Deputy CIO, Department of Defense

As the CIO our job is to enable Net-centric Operations, basically by delivering the power of information in both and planned and unplanned situations and with partners that we anticipated and with unanticipated partners.

Jim Flyzik, The Flyzik Group

Great, MG Mike Vane, tell us a little about Net-centricity from your perspective and your involvement and how you see this particular issue.

Major General Michael A. Vane, Vice Director for Force Structure, Resources and Assessments, J-8, Joint Staff, Department of Defense

We're responsible for assisting the chairman and providing military advice to the sec of defense on future capabilities which are capabilities associated with Net-centric Operations is one of those. Net-centric Operations is yes certainly about information and intelligence and passing of that access, sharing and collaboration but not just for information sake but to overcome cultural barriers that we've had in the past about hoarding information, become transparent and to provide that information to the multiple users to accomplish missions, missions responsible for creating battlefield effects across teams of teams and joint interagency coalitions.

Jim Flyzik, The Flyzik Group

Brigadier General Warner at DISA, I know DISA plays key roles in coordination across Defense. What does this issue mean to you?

Brigadier General Dave Warner (USAF), Director, Command and Control, PEO C²C, DISA

As the director for command control programs at DISA, I have several programs on my plate that are going to be very dependent on the information that is going to be provided through this kind of environment we are trying to establish. And when you think about command and control, command and control is all about enabling the decisionmaker with that vial of information at the right time, so he can gain decision superiority and outflank the enemy based on the use of that information and complete the mission at hand. So again it's very critical that we create an environment where information, as General Vane stated, is not hoarded, but is provided so that all who need can have access to it, can consume it and then put it to proper use to achieve the desired effects.

Jim Flyzik, The Flyzik Group

Great, because I know as Americans we all take pride in trying to provide information so we can stay one step ahead. Terry Mansfield, from an industry perspective what does Net-centricity and Net-centric Operations mean to a corporation like Unisys?

Terry Mansfield, Director of Net-centric Operations, Unisys Corporation

We, obviously like a lot of folks in industry, want to be engaged in the activities involved in moving ahead to provide Net-centric capabilities. One area I would highlight would be our work with the Joint Forces Command helping them And working with other combat commands and agencies like DISA and military services to implement the DOD Net-centric data strategy to make data visible, accessible and understandable, so that you can get at it, bring it up and use it in ways most effective for the joint warfighter. We're doing that primarily through working with communities of interest, particularly ones that are basically (doing) some groundbreaking work to move ahead in this, because this hasn't been done before this way. (We are) focusing on time sensitive targeting, working closely with the Air Force and others. And (on) Blue Force tracking we're working with the Army and others on that. So there are a lot of exciting things going on and we're very, very pleased to be involved in that.

Jim Flyzik, The Flyzik Group

Great, you are bringing up a great point and I'd like to get back to that a little later on as to why we are moving in that direction. But before we do that we would like to hear from the rest of our panelists. Dr. Ron Jost, Deputy Assistant Secretary of Defense, C3 Space and Spectrum, tell us about your office involvement and what Net-centric Operations means to you?

Dr. Ron Jost, Deputy Assistant Secretary of Defense for C³/Spectrum/Space, Department of Defense

We oversee the programs, the command, control, space and spectrum programs that are heading toward the objective of Net-centric Operations. We not only do that, but we also set the policies, which establish the direction for those programs, combining them to be focused on the Net-centric Operations target.

Jim Flyzik, The Flyzik Group

John Landon, being involved with acquisitions, I guess as you move to this new paradigm, this new world of Net-centric Operations there are some challenges there. How does your office support this program?

John Landon, Deputy Assistant Secretary of Defense, Acquisition, OASD (NII), Department of Defense

What I wanted to emphasize is my office is responsible for organizing the reviews of these major IT acquisitions. With regard to Net-centricity, what we are trying to do is to ensure that the programs that we are developing fit into the overall Net-centric architectures.

Jim Flyzik, The Flyzik Group

Dave West at Cisco, another company that when we think of Cisco, we think of the Internet, we think Net-centric, we think global information grids and products that will be associated with that. Tell me, what does this mean to a company like Cisco, moving to Net-centric Operations?

David West, Director, Field Operations Federal Center of Excellence, Cisco Systems

At Cisco, we are looking at standards and processes, as well as solutions to provide Net-centric Operations: (that is) the capabilities that they require to provide for information sharing; communications capabilities that go above and beyond the capabilities that are there today; collaboration; and then common access to data stores, so there will be a seamless convergence of voice, video and data on the battlefield to support the warfighter and the supporting elements.

Jim Flyzik, The Flyzik Group

Great, I look forward to these days (now) when we can talk about converged communications and the exciting things ahead. Cheryl Robey, Deputy Assistant Secretary of Defense for Resources, you have some challenges in that office also. What does the movement towards Net-centric Operations mean to you?

**Cheryl Roby – Deputy Assistant Secretary of Defense, Resources,
Department of Defense**

The power of information to achieve the agility we need has to be properly funded. So our job is to work with the comptroller and the Congress to ensure that we get the right bang for the buck and serve the warfighter in effective and complete way.

Jim Flyzik, The Flyzik Group

The money is always important. Our listening audience needs rally and help support all of you to make sure we keep these programs rolling.

But now I want to ask a question. Let's start with DISA this time, Brigadier General Warner, why do we need to change? Why do we need to go to this new Net-centric Operation? Why not just keep doing what we've been doing? What makes this so important?

**Brigadier General Dave Warner (USAF), Director, Command and Control,
PEO C²C, DISA**

I'll give you an example from a programmatic standpoint. I currently have global command, control systems join our current command, control capability that we provide to the warfighter, and there are some 90 interfaces that tie into that program. So for me to be able to be agile with 90 interfaces, I absolutely cannot.

If there is a change in any one of those programs it causes a ripple affect all the way throughout. And you can bet that there is lot of duplication in those 90-some interfaces. There are lots of databases out there that do not share information as we have been talking about. And so therefore we have to move to an environment that allows us to provide capability in a modular fashion so as technology comes along or people develop a new way of doing business, we can change quickly, get it into the process and test it out and get it into the hands of the warfighter in a faster way. Speed is absolutely essential.

Jim Flyzik, The Flyzik Group

Speed, agility, being dynamic and having the ability to change rapidly (are certainly essential). Priscilla, from the Pentagon perspective, as the deputy CIO, why do you see the need to do this? What is the driver for Net-centric Operations?

Priscilla Guthrie, Deputy CIO, Department of Defense

I think in addition to what General Warner mentioned, I call on what General Vane said in his introduction. It's also about being able to share information with unanticipated partners in unanticipated or unplanned situations. You know, we spent many years moving from service-centric to joint, yet today we really fight as coalition forces. We worked tsunami relief as a coalition effort. So it's the ability to share information with not just people we planned to share information, but with unplanned partners in unplanned situations. And that adds to the problem that General Warner mentioned earlier. We can no longer afford to wait and reprogram, we have to make the power of information available right up front.

Jim Flyzik, The Flyzik Group

General Vane, we've heard your name mentioned a few times there. Is there anything you can add as to what are the drivers for the change and what it will do for you?

Major General Michael A. Vane, Vice Director for Force Structure, Resources and Assessments, J-8, Joint Staff, Department of Defense

I think the most of the listening public recognizes the national security environment has changed. It has changed tremendously from larger standing armies, air forces and navies facing each other across boundaries where we had a certain amount of predictability, knowing what our enemy was going to do, what new weapons systems, what new tactics and techniques he was going to produce and use. (This was the case) in the 1980s and 1990s.

And while we still need to maintain that traditional type combat capability against other potential competitors around the world, increasingly we see our potential enemies as nation states and non-nation states that possess capabilities across the lines of irregular warfare, capabilities to possess weapons of mass destruction and perhaps niche capabilities that can disrupt our operations (between) services, between coalitions and our allies.

This leads to a very unpredictable environment; a very unpredictable environment about who we are going to fight with, and we recognize we have to fight with many other people, but also who we might fight against. And that unpredictability requires a certain agility, requires adaptability, requires leaders at all levels to be knowledgeable, informed and share information and have access to information on an unprecedented level. I think that drives the need to continued change.

Jim Flyzik, The Flyzik Group

That's well said, well put. Now, let's hear from other panelists. We have heard about why we need to move to Net-centric ity, but what are some of the key benefits that are going to arise? Let's start with Cheryl.

Cheryl Roby – Deputy Assistant Secretary of Defense, Resources, Department of Defense

One of the things I see is that we are going to stimulate the young people joining the military. They have grown up in an environment where information is at their fingertips. And they can't come into an environment where the need to know stops information flow. So I think the stimulation they are going to get with this new environment where information is available upon demand is going to really bring us the benefit and the power of information flow.

Jim Flyzik, The Flyzik Group

Great, John Landon, what do you see as some of the key benefits of this new approach?

John Landon, Deputy Assistant Secretary of Defense, Acquisition, OASD (NII), Department of Defense

When we look at it, the real benefit of Net-centric Operations is the ability to access data. When you think about it, it gets back to being to able to get to the data. Anyone can use the data in different ways by tailoring their applications. So the same data can be used in multiple ways. It's fascinating when you start thinking about the leverage you get from being able to get to data.

Jim Flyzik, The Flyzik Group

Dr. Jost, key benefits from your perspective.

Dr. Ron Jost, Deputy Assistant Secretary of Defense for C³/Spectrum/Space, Department of Defense

I think that when you share information between the warfighter and the sources and some of those sources being the warfighter themselves, you effectively increase or multiply his effectiveness. So it's about the warfighter; an increased effectiveness by using and sharing information. That's the key.

Jim Flyzik, The Flyzik Group

Information sharing is so important these days especially in DOD as well as DHS. Now, how about the industry perspective? Other than the obvious, the business opportunities, what do you see as the benefits of moving to this new world? What benefits do you see for Unisys in a Net-centric Operations world?

Terry Mansfield, Director of Net-centric Operations, Unisys Corporation

We've all grown up in a systems centric world where we have systems built for particular purposes and that same system might be able to talk and interoperate with the other similar system. When you interject that with other things, then we have a problem.

So the way we have all talked about achieving interoperability for some time now, the way we are going to try to do it now with the Net-centric approach is deal with it at the data level, at the information level, so that we can get interoperability that way rather than try to get systems lashed up with one another.

Because as soon as you get 10 of them lashed together, there is an eleventh, and then you have a problem. And then one drops out and you have another problem. So it's just an issue that you can never solve that way.

We have a great opportunity here with the Net-centric approach to deal with it. You see right now when you look at Lebanon right now (with) the force that's gathering there. They are going to have to share information. There's no way to do that with the way we were doing business before in any kind of effective way. Net-centric approaches gives us a fighting chance to bring those folks together based on a set of standards centered around how we get the data and deal with it, and present it as information using things like web services and a service oriented architecture. That's our great opportunity and we just need to step up to the plate and meet that challenge.

Jim Flyzik, The Flyzik Group

Dave, from the Cisco perspective, what benefits do you see?

David West, Director, Field Operations Federal Center of Excellence, Cisco Systems

We believe it's the promise of always available services and capabilities. The virtualization of technologies that allow the warfighter or the logistician to be able to capitalize on the network, on the platforms out there, to do their job, to share information seamlessly across the battle space regardless of service, agency, state, local or our coalition partners. The promise of Net-centric Operations is that there is not going to be stovepipes or hindrances to data sharing and storage that that common medium will be available regardless of what role you play.

Jim Flyzik, The Flyzik Group

We've talked about some of the key benefits. One of the things that have been brought out is that it's not about technology; it's about people and processes. But there are some technical challenges out there. On an earlier program, we talked about Internet Protocol Version 6 (IPv6) and the movement towards it. Is that a major issue here? Is IPv6 going to be a key component? Let's start with Dr. Jost.

Dr. Ron Jost, Deputy Assistant Secretary of Defense for C³/Spectrum/Space, Department of Defense

First, IPv6 is important and it is a critical component. IP is, as far as the transport layer goes, the convergent point. We've selected that and we are heading towards IPv6. IPv6 offers a mobility improvements, it offers improved security and it offers a massive address space that we'll need that when we implement it. (With IPv6) the number of IP addresses expands very, very rapidly and IPv6 enables this.

Jim Flyzik, The Flyzik Group

From an industry perspective, let's ask Dave West at Cisco. Are you ready for IPv6? Is that something you are ready to roll out all over the world?

David West, Director, Field Operations Federal Center of Excellence, Cisco Systems

We're preparing ourselves to be ready for IPv6 in all of our products and solutions. The idea and the promise of IPv6 is that it allows IP be always available, (with) the need not to go through large translators or bridges. It truly allows the mobility aspects and the security aspects to come to fruition without having to stop and put a bunch of middleware and a bunch of other applications between the information you want to provide to the end user and the sources that are providing that information.

Jim Flyzik, The Flyzik Group

Other terms we hear and its technical issues is the movement towards service oriented architectures to drive strategies. Brigadier General Warner, is service oriented architecture a key component in your planning future strategies around Net-centric Operations?

**Brigadier General Dave Warner (USAF), Director, Command and Control,
PEO C²C, DISA**

As we look at the next generation of command, control capability, the net-enabled command capability, it is absolutely going to be based on a service-oriented architecture framework. The example we use, if you think of Travelocity or maybe the way you'd like Travelocity to be. If you want to go on a trip, you want to be able to go out, put in your parameters: how much time you want to be gone; how much money you want to spend; (and) what activity you want to do. You'd like for the computer, the system to be able to go out, to have access to information, to services that are out there and be able to come back and give you options. And based on those options you'd can then make some choices, make some changes and then say this is what I choose. And then you go through a service that books your tickets, plans out your itinerary, maybe takes the money out of your check account that's secure and then puts your trip into place.

Well, let's say you are out on patrol and you come across a high value target and locality. So now you need to put in some parameters. I need to know what assets are available to me. I need to know what Intel I have available to me. I need to know where my "friendlies" are around and what other types of enemies may be around. And then being able through a service oriented architecture construct to have that information provided to you so you're then able to accomplish your mission.

So from a service oriented architecture construct, as we go into net-enabled command capability, we're going to look at breaking down those mission threads that I've just described (for) time sensitive targeting. (We're going to) look at what functions are needed to accomplish that mission thread, find where the capabilities are (in modules) and be able to link those together, so that you can again satisfy and accomplish that mission.

If we don't do that, then we will then again be back in the morass of where you have tightly coupled programs that if you make one change then there will be ripples all the way out, (and) you'll continue to have stovepipes.

With this modular format, again as changes (come) from industry, as they get more creative and they find new ways of doing business, then we can quickly bring those in to the program, get them through the process and get them into the hands of the warfighter. So now we are getting at that responsiveness that we've all talked about. So without that capability, again we're going to be tied to very difficult process we currently have of trying to quickly make changes based on what the warfighter's needs are today.

Jim Flyzik, The Flyzik Group

You brought up security there. I think that's a very interesting topic too. You hear about cyber security, cyber attacks, other nation's targeting the DOD, some people talking digital "Pearl Harbor", some saying it's all hype. As we move to a new net-centric world, do we feel better about our security posture, will it improve security? Let's start with Priscilla?

Priscilla Guthrie, Deputy CIO, Department of Defense

Well Jim, a lot's changed since I worked for you way back when. We talked about information sharing and the foundation or the enabler for Net-centric Operations is indeed information sharing. You obviously can't have information sharing without the companion piece, information protection. We believe and we're embarked on a grand effort to prove it out. But we believe that the combination of the data strategy that Mr. Mansfield described and the IA Architecture and planning we've put together provide that balance so that we've basically assured information sharing.

It's about assuring the data, it's about assuring the environment, it's about identity, it's all of the pieces that go into making an environment secure and allowing people to function and trust the network and the environment. So I'm pleased to say that after a few years of struggling I think that we've come up with a plan that will work and we're in the process of implementing it.

I was taken back the other day when someone told me that they had no IA issues. It was someone in government; I won't go further than that. I think that can't be true of any environment today, but I'm pleased to say that NSA has come on board, they recognize the requirement for information sharing and I think you are seeing significant department focus and progress on working this intractable issue of the companion pieces of data strategy, making information available and then doing the required work to make sure that information is protected.

Jim Flyzik, The Flyzik Group

Cheryl Robey, from a resource perspective is security, are there challenges there in terms of the resources that you need to bring to the table?

Cheryl Roby – Deputy Assistant Secretary of Defense, Resources, Department of Defense

There are always problems when it comes to money. Our biggest issues are we have a very large budget and many people will look at that and say, certainly be good enough for everything you need to do in DOD. However, we do struggle with ensuring we have the monies necessary to fight the long war which we are embarked right now, as well as to look to the future. This information environment that we all been describing does have costs associated with it. And as we look to the challenges we must ensure that if we want to access, we to be able to make the information available upon demand of the users as was pointed out, it does require us to be good stewards of the dollars that are available to us.

Jim Flyzik, The Flyzik Group

Major General Vane, tell us about the information security challenge from your perspective with the Joint Staff? Is this something that you see Net-centric Operations being helping?

Major General Michael A. Vane, Vice Director for Force Structure, Resources and Assessments, J-8, Joint Staff, Department of Defense

In addition to what Priscilla and Cheryl have already stated, which we agree with as well, I think one of the challenges we are very interested in from the Warfighter's perspective is protecting the right information at the right time; not necessarily protecting all the information all the time. And that also becomes one of our key

challenges, to ensure that as we do disseminate this information quickly around the battlefield -- and speed in itself can be an information security enabler -- are we ensuring protection of the right information at the right time.

Jim Flyzik, The Flyzik Group

That's a great point. When we had Gen. Meyerrose on the show we talked about how you know how important information is. For example, information about a bridge may not be all that important, but when all of a sudden the bridge is something that the enemy is targeting then all of a sudden it's a whole different question.

Brigadier General Warner, what is your perspective on this security issue?

Brigadier General Dave Warner (USAF), Director, Command and Control, PEO C²C, DISA

I would just like to add, as you well know, we are entering into our 2nd anniversary of the stand-up of the taskforce for global network operations. And this has been quite an effort, quite a journey of putting some command, control over our ability to secure and protect our information and our networks. And great strides have been taken to get some commonality, tools, processes and standards out there; and again to treat the network as a weapons system. And so again a lot of great work has gone on throughout, from DISA's standpoint under the leadership of General Cartwright at STRATCOM, throughout all the services to again ensure that when we need to mobilize the network and make a fist and that all the fingers are playing in the right direction.

Jim Flyzik, The Flyzik Group

Well put. Terry Mansfield at Unisys, I know Unisys has put a lot of emphasis on security and information assurance these past few years. How do you see the challenges changing as we move forward to the next generation Internet, Net-centric Operations and the global information grid?

Terry Mansfield, Director of Net-centric Operations, Unisys Corporation

Unisys has been placing a lot of emphasis on information assurance (and) information security to be done within a net-centric framework. I'm pleased to see that because it's absolutely essential. My personal background, when you go back a few years, I led a team, in my last military assignment as Joint Forces Command that developed, and I was principal author of the Global Information Grid (GIG) capital requirements document, which laid out these overarching requirements in things like information assurance and all the things we need to have an effective Global Information Grid. So the things that are going on now, including in the information assurance arena are very exciting, because we are getting along about the business of actually implementing these capabilities. Having a good set of requirements, you have to have that, (is essential), but you have to go ahead and actually to the hard work with all the parties involved -- and there are many parties involved -- to actually implement that. And the other key factor that we stressed in the CRD, was, that information sharing has to take place end-to-end. And there is no distinction made between the highest strategic and the lowest tactical. From the Warfighter's standpoint, especially in a net-centric world, you can't make that distinction any more than when we go on the Internet we care where that data

comes from as long as it's valuable to us. So, that's the challenge we have. And the good news is that we are moving ahead to actually doing that, which is very exciting.

Jim Flyzik, The Flyzik Group

John Landon, from your perspective, security and acquisition; is there new challenges? Do you build security requirements into everything you are doing when you are acquiring products and services?

John Landon, Deputy Assistant Secretary of Defense, Acquisition, OASD (NII), Department of Defense

When we bring a program in for review during an acquisition process, one of the elements we clearly look at is their information architecture, their information assurance plan. And this is a critical piece and probably one of the big changes on acquisition is that we have opened the aperture to make sure that all of the elements that you need to consider are present on a successful acquisition. Are you using the right data strategy? Are you using the right information assurance products? I think the challenge, particularly in the information assurance area is not convincing people them when there is too little because you see the affect of too little security. The big problem is convincing them when they have the right amount; because the end product is have no intrusions.

Jim Flyzik, The Flyzik Group

It's always a difficult question, how much is enough, how much is too much? And that risk analysis question on how much to spend. General Warner, you had a comment to add on this question?

Brigadier General Dave Warner (USAF), Director, Command and Control, PEO C²C, DISA

I just want to add on to what Mr. Landon says about the acquisition process. As we move into this new command capability, net enabled command capability, we are going to prove out the concept of a federated development certification environment, also known as the Sandbox; (this is) a virtual environment where you can bring in these capability modules that are going to satisfy the Warfighter's requirements. And what we want to have happen within that Sandbox is that we want to bring together the Warfighter, the user, the requirement's owner, the testers and the certifiers so as you bring in this capability module you are doing all of that at one time.

So you are ensuring that the right level of information assurance and security is there. You can also ensure there is a price of entry; that when folks bring forward their capabilities, their solutions that they have already considered and built in the security and the data standards we ask for. So again this environment is going to be very dynamic, very fluid and allow us as a team from the testing community, certification community and Warfighter community to deliver what the Warfighter needs; and that it is secure and will deliver the right information at the right time as General Vane said.

Jim Flyzik, The Flyzik Group

Priscilla, here is a question for you. Back then, when we were working together and we had 14 bureaus and we were the HQ, sometimes getting everybody to march in the same direction was a real challenge. Do you have some type of a governance process or structure in place, or some type of mechanism in place to keep everybody working toward the same common goals at DOD?

Priscilla Guthrie, Deputy CIO, Department of Defense

The role of the CIO, as you know, has evolved significantly in the 10 years since it's been instituted. We have today, not only a fairly robust CIO process, but it's been (augmented) with the portfolio management structure that allows us to look at the entirety of the DOD IT environment. It's divided into 4 mission areas; one is the enterprise information environment; that's what we used to call infrastructure and it underpins everything the Department does. Then we have a Warfighting mission area, a business mission area and an intelligence mission area. Adding those groupings, if you will, has helped us work our governance processes.

Obviously we are under duress today, taking on a lot of unanticipated challenges perhaps. What we've found is that the collaborative environment that we've formed across the Department, particularly in working with the Joint Staff, as they bring the warfighting perspective has helped us enable our processes and focus them on Warfighter needs. I think it's going well. It's certainly difficult. The scale problem exists. It's a very big Department. But I see a great shift from the stovepipe, service-centric functions to a need for enterprise. We've gone from why do we need the CIO, to where is it now? So, it's a big change.

Jim Flyzik, The Flyzik Group

That's great. From the outside perspective, reading what has been written, it sounds as if everyone is following the same story. General Vane, you had a comment?

Major General Michael A. Vane, Vice Director for Force Structure, Resources and Assessments, J-8, Joint Staff, Department of Defense

I'd like to follow up on what Priscilla mentioned from the joint Warfighter's perspective. The capabilities and requirements are brought into the Joint Requirements Oversight Council. One of the things that we've established over the past couple of years, with the help of the C3I and IT communities, is the establishment of net-ready key performance parameters, which are an essential set of requirements for every system that is going to operate and communicate on the battlefield of the future; that it come through this joint requirements oversight capabilities process. And ensure that the architectures that they are all operating in, whether they are operational architecture systems (or) technical, (that the) architectures are all reviewed and ensure that the appropriate levels of interoperability and connectivity are established early on the system design (along with) its set of capabilities.

Jim Flyzik, The Flyzik Group

In our last segment, what do you see as the biggest challenge and your vision of the future?

Cheryl Roby – Deputy Assistant Secretary of Defense, Resources, Department of Defense

I think I'd highlight two of them for you. We have the issue of culture shift. We talked about information and the need to share that information, but we've grown up in an environment where the power is in what information you know. We have to change that mindset. It has to be information sharing. We have to be able to get away from hoarding information and getting that information available so users upon demand can get what they need.

The other challenge I think we face is return of investment. There are so many challenges for us (dealing) with resource issues, and if we can explain the return on investment to our senior leadership, to the Congress, I believe we will be successful in getting Net-centric Operations pervasive in DOD, with our partners in the Intelligence community and in that world we have now begun to use much more, which is the non-governmental organizations -- the first responders, the people that are out there. All of that information needs to be a part of that net-centric operation.

David West, Director, Field Operations Federal Center of Excellence, Cisco Systems

Policies, procedure (and) governance are going to be critical to making Net-centric Operations a reality. (There are) lot's of information silos (and) interoperable communications systems today. Net-centric Operations, at least in our vision, (offer) capabilities that are virtualized across every platform out there, (so that) every warfighter, every munitions system becomes a node on the network with the capability of sharing information up and down the chain of command; where collaboration becomes seamless across service boundaries, across state and local agencies; where there's common data stores available to allow people to access the information to prevent those silos of occurring. So there is a lot of promise and a lot of capabilities with Net-centric Operations.

John Landon, Deputy Assistant Secretary of Defense, Acquisition, OASD (NII), Department of Defense

Let's take it from two perspectives; one is from the government program manager's perspective and the other is from the industry perspective. Both of these are really challenges. The government program manager is exposed to a lot of dependencies once we move toward service-oriented architectures. He is going to have to go out and identify the communities of interest, the standards, the data strategies, all of those pieces. And it means he is dependent on a lot of other people. In the past, success was really if you could control everything within your program. And now we are moving towards an era where you have to depend upon a lot of other products in order to be successful.

Now I would say, from the industry perspective, what I've noticed so far is there's really a large shift in the business model. We have been working on tightly coupled systems, essentially which are very stovepiped, very often very proprietary information (with) proprietary data standards and strategies that have not allowed sharing. And so now we have to break that model and move towards a loosely coupled model where you plug into the system to access data and provide the capabilities you are really after. The future is very bright because once we put these services in place, identify our data, then industry can now concentrate on applications that make the most use of the data that's out there.

**Dr. Ron Jost, Deputy Assistant Secretary of Defense for C³/Spectrum/Space,
Department of Defense**

I think combining a technical and programmatic perspective and vision of the net-centric information sharing environment, dividing that into a transport layer. And I think the biggest challenge there is the IP tactical edge, that wireless edge. I think the next layer in that, in that incremental view might be the services or enterprise services layer. I think the SOA and the data tagging and structuring get all the data and people to be willing to share that data and structure enables that. And the upward layer, the applications, that SOA environment enables the applications to be loosely coupled. But getting the applications truly to be loosely coupled (has been difficult), because we've been living in a very tightly coupled applications environment. Finally the IA, that information assurance that spans all of those layers, that is in every single element, which is another challenge to itself. So each one of those dissected layers of the physical and programmatic systemization of the GIG and network-centric operations have their own individual challenges.

Terry Mansfield, Director of Net-centric Operations, Unisys Corporation

Obviously we want to get the right net-centric capabilities out there. You know you can do all of the right things --we have plenty of guidance out there, plenty of standards, we have all of that, (but) it's about moving ahead together to implement things in the right way.

Frankly from our vantage point -- working with Joint Forces Command and others (and) working with communities of interest -- what we bump up against very quickly, because many of the participants in those (communities of interest) come from the operational side, come from the technical side, come from the program side and so on, so you have the right mix of folks. The challenge on the programmatic side is that they're all kind of stovepiped, they are working down trying to beat the alligators in front of them that are hard enough anyway and then you ask them to step back and look at a broader swamp that may be full of alligators to deal with and that requires a cooperative effort.

My personal opinion from watching things and experience is that the synchronization of these program efforts in a horizontal way to support what we need to for net-centric capabilities needs a little bit of work. So if we can address that and break away from this, "I've got to do this but I don't have time to look left or right", we may make some progress.

And as we go forward right now, we're still in the relative beginning stages of what is an exciting journey to implement net-centric capabilities. And we're getting some success stories. But program managers are holding back a little bit and saying well, "OK, I need to share, do some burden sharing and resource sharing, yet how do I do that and ensure that I take care of my boss here, so that we get the job done."

So that's where we are right now, and I think if we can find a way to get that kind of broader synchronization -- I think that's where OSD and the efforts with the net-enabled command capability, which by its very nature requires you to work across with all these folks -- I think there is a great opportunity to make some progress.

**Brigadier General Dave Warner (USAF), Director, Command and Control,
PEO C²C, DISA**

I agree with everything that has been said. So let me bring it down to my environment, which is the Program Executive Office's role that I have. I would say that the first area that we're tackling right now with Joint Forces Command is joint combat capabilities developer's requirements process.

In the past it has taken 18 to 24 months to get requirements defined and through the process. So you start off trying to answer what the Warfighter needed yesterday and then the process takes so long that you deliver what he needed yesterday, maybe today, but you deliver it with yesterday's solutions. And so you are just "shooting behind the ball". So we're working with them to make this process a little more fluid. And again the vision, the opportunity for the future is with this Federated Development Certification Environment of getting them in the Sandbox with us, with the Warfighters, the users, the folks who are actually going to have to eat this dog food we are going to produce to tell us "yes you've got it right or no you didn't, you need to make this change", we'll be fluid enough to be able to make this change.

The other challenge is the testing community. Again to convince them, as we work with them, that a virtual environment which we are going to establish is able to be rigorous enough and representative enough of the Warfighter's environment to allow us to get the project's capabilities modules through there and get them certified again in a timely, speedily fashion and get them in the hands of the Warfighter.

But I'm encouraged; all the communities are working with us. This is a new way of doing business. This is a cultural shift as the services are going to have to open their kimonos and show us what they're working on and team with us. But again, through the net-enabled command capability, we're going to have great progress.

Priscilla Guthrie, Deputy CIO, Department of Defense

Our American serviceman and women are absolutely the best. I encourage your audience to go out and meet them. They do wonderful things on behalf of all of us. Our job is to get them the information they require so they can continue to perform their magic. And I'd say it is three pieces and we've talked a little bit about all three of them.

The first one is the data strategy, making data visible, accessible and understandable. The second one is the companion piece, the information assurance to protect the data and the environment. And the third one is the ability to operate or manage that vast IT environment that supports everyone; that includes the tactical, mobile environment that Dr. Jost described earlier.

I'm pleased to say that working primarily with the Intelligence community, we have the confidence today that we think those three pieces provide an Information Sharing environment that's useful not only to the Department and the Intelligence community, but provides a model that could be useful for the Federal government. So, I'm very positive. I think we have great challenges but I think we've come a long way and I think we've got the vision.

Major General Michael A. Vane, Vice Director for Force Structure, Resources and Assessments, J-8, Joint Staff, Department of Defense

The challenges of the future are associated with the people, the processes and the technology necessary for Net-centric Operations. And people are the centerpiece of

our operations, Soldiers, Sailors, Airmen, Marines, Civilians, Contractors, all those interfaces with joint, combined interagency operations and coalitions.

So, the change for the people is perhaps one of the most critical things that I see; particularly people that are at mid-level and more senior level who have grown up with information and information as power, as opposed to information and sharing and access and collaboration. And information as an enabler that Net-centric Operations allows us.

But war is an ugly, nasty environment. It requires a commonality, a vision and a commander's intent. And Net-centric Operations will not take away the fog and the friction of war. In order to carry out the priorities of the Secretary of Defense (and) the Chairman of the Joint Chiefs of Staff, both of which state we need to continue to fight and win this global war on terrorism, transform our force's strength and our joint combined forces, perhaps one of the most key enablers of all this operation is Net-centric Operations. In the future uncertainty and unpredictability will be the domains that enemies try to introduce to our forces. Necessary to counter that is agility, adaptability and anticipation of potential enemy capabilities and putting the right decision tools and information in place to enable people to assist in developing rapidly courses of action to act against this enemy inside his decision timelines is critical.

Imagine an ability to track an individual carrying weapons of mass destruction across a city/state boundary (and) pass information quickly to units capable of eliminating or intercepting that individual before he is capable to act; an ability to re-task a unit on the move complete with best intelligence can provide, command and control decision graphics, commander's intent, possible branches and sequels and corresponding courses of actions in minutes, not hours or days.

Imagine an ability for units -- in contact with the enemy -- to access strategic and national systems and databases to understand enemy characteristics and again act inside an enemy's decision cycle.

The most important thing that Net-centric Operations can do is enable Soldiers, Sailors, Airmen and Marines at all levels to make decisions better, faster in delivering the effects required by our national security strategy.